Electric Safety in Construction For Non-Electricians

Hazard Alert

About 140 construction workers are killed by electricity every year; more than 90 of them are not electricians. Most of the electrocutions of laborers, carpenters, painters, and others are from contact with overhead power lines. Other causes include contact with power tools that have bad wiring, metal objects touching live (energized) wiring, and live electric wiring, equipment, or machinery. Workers are killed even by household current.

Before You Work

Make sure you are trained in electric safety. OSHA says your employer must train you in recognition, avoidance and prevention of unsafe conditions.

Before outdoor work begins, your employer should call utility companies to find underground power lines and to turn off or insulate (if possible) any overhead power lines near your work. If overhead lines cannot be turned off or insulated, there should be warning cones or lines or other barriers to prevent equipment from getting too close. Unless you know an overhead power line is turned off, stay at least 10 feet away more than 10 feet if the line is over 50,000 volts.

OSHA says your employer must check to see if there are any live electric circuits where you can contact them such as overhead or underground power lines or circuits in walls where you might drill. If yes, your employer must put up warning signs and tell workers where the hazards are and how to protect themselves.

OSHA says each 120-volt 15- or 20-amp outlet that is not part of permanent building wiring must have a ground fault circuit interrupter (GFCI), unless the site has a written assured grounding program.

Look over everything you will work with. Remove from service and tag as Danger anything that has exposed wiring, a missing ground prong, a cracked tool casing, or a frayed, taped, or spliced cord.

Lock out/tag out machinery or other equipment you will work on. This is so no one will turn on the power while you are working. Only qualified persons* may work on electric wiring and equipment (electric panels and boxes, motor controllers, circuit breakers). **Make sure the current is off.**

Keep at least 3 feet of clear work space around live parts of electric equipment.

OSHA says live parts of electric equipment must be inside cabinets, separate rooms, or other enclosures or put them 8 feet up (or more). High-voltage equipment (more than 600 volts) must be in a controlled area open only to qualified persons. Electric equipment, tools, machinery, and a way to disconnect the power to equipment or machinery must be clearly labeled.

* For electric safety, OSHA says a *qualified person* is one familiar with the construction and operation of the equipment and the hazards involved.

As You Work

In wet or damp areas or hazardous locations, use only tools or equipment designed and labeled for such areas.

Keep **metal** ladders, pipes, or other conductive objects away from live electric circuits, energized parts, and power lines.

Receptacles for permanent mounting must not be used on the floor or ground.

Let only qualified persons replace circuit breakers or fuses.

Grounding

OSHA says all electric systems must be grounded. The employer should regularly check all electric systems (equipment, machinery, wiring and switches) to be sure the path to ground is continuous. All exposed metal parts of electric equipment must be grounded.

All machinery and power tools must be grounded with 3-prong plugs or double insulated.

Cords

Use only factory-made 3-wire extension cords marked for hard or extra-hard usage. Do not attach ungrounded 2-prong adapter plugs to 3-prong cords and tools.

OSHA says do not run cords through door, window, or floor openings, unless protected. Do not run cords through holes or attach to inside walls, floors, or ceilings. Use clamps or other ways to secure cords at plugs, outlets, tools, and equipment. When you unplug anything, pull on the plug, not the cord to prevent damage to the connections.

In case of electric shock

Call emergency services (or 911). If your co-worker is still in contact with electric current, do not touch him/her or you may get shocked too. First, turn off the power or use voltage-rated gloves or another nonconductive material to remove him/her from the power source. Then start CPR or other first aid, as needed. OSHA says there must be people trained in CPR and first aid on the site. (Automatic defibrillators can save lives.)

For more information, call your local union, the Center to Protect Workers Rights, CPWR (301-578-8500 or www.cpwr.com), the National Institute for Occupational Safety and Health (1-800-35-NIOSH or www.cdc.gov/niosh), or OSHA (1-800-321-OSHA or www.osha.gov). Or go to www.elcosh.org

 CPWR is the research and development institute of the Building and Construction Trades Dept. (BCTD), AFL-CIO: CPWR, 8484 Georgia Ave., Silver Spring, Md. 20910. (Edward C. Sullivan is president of the BCTD and CPWR and Joseph Maloney is secretary treasurer.) Production of this card was supported by NIOSH grant CCU310982. The contents are solely the responsibility of the Center to Protect Workers Rights and do not necessarily represent the official views of NIOSH.
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